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Outline of a New Classification for the Legion *Lestes* Selys (Order Odonata)

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Selys, in 1862, published the first and the only monograph of the Legion *Lestes* which has appeared; later the Legion became known as the family *Lestidae*, belonging to the suborder Zygoptera within the order Odonata. In that monograph, Selys included five genera and 50 species but excluded three other genera which are now known to be true *Lestes*, viz., *Perilestes* Hagen, *Chlorolestes* Selys and *Synlestes* Selys; these he placed in the Legion *Podagrion*, now known as the family *Megapodagriidae*. Since 1862 a large number of new genera has been created and a still larger number of species has been discovered, so that the number of the former has more than quadrupled and the number of species trebled. Moreover, the family as a whole has acquired a new significance from a taxonomic point of view, since there is good reason to believe that the stem of the suborder Anisoptera and the whole of the recent Zygoptera (*Agrüidae*) have had their origins in the *Lestidae*, that is to say, the *Lestidae* were the direct ancestors of the suborder *Anisoptera* from which all recent forms of Odonata have descended. From these considerations, there is no need to stress the need for a revision of the classification of the old Legion *Lestes*. With this in view, I have been collecting data and material for the past ten years and a comprehensive monograph is now nearing completion, but as it seems probable from the present difficulties in publication, that some time will elapse be-

fore this work can appear, I take this opportunity to present an outline of the new classification involved. It will be seen hereafter that three families are included under one superfamily for which the correct name should be *Lestoidea*, but unfortunately this name is pre-occupied by *Lestoidea* Tillyard, a genus in the family *Megapodagriidae*; thus I have been compelled to employ the name *Lestini* for the superfamily.

Superfamily **LESTINI**

(= Legion **Lestes** Selys plus Legion **Podagrion** pars Selys)

Zygopterous dragonflies of small, medium or, more rarely, large size, characterized by the elongation and production posteriorly of the anterior hamules of the male genitalia. Fore- and hindwings of approximately the same size and shape, with long slender petiole and usually elongate pterostigma; nearly always (save in the most primitive species) an oblique cross-vein connecting Riii and IRiii about the middle of the wing (this vein representing the original site of a trachea which was borrowed by the intercalary from Riii). IRiii and Riv exhibiting a gradual lengthening towards the base of wing as traced from the more primitive to the more recent species.

Family 1. **PERILESTIDAE**

Small dragonflies with long and very slender abdomen. Venation characterized by the discoidal cell approaching or actually impinging on the posterior border of wing at which point the anal vein takes origin or is compressed between the discoidal cell apex and posterior border of wing; pterostigma quadrate, subquadrate or oval; oblique cross vein between Riii and IRiii absent or merely represented by the basal attached portion of IRiii.

Subfamily **Perilestinae**

Discoidal cell of forewings closed at base. Radius greatly thickened especially in its basal half.

Key to Genera of Subfamily Perilestinae

1. IRii only 3 cells in length, its inner end distal to the proximal end of pterostigma *Perilestes* Hagen.
New World. Genotype *Perilestes fragilis* Hagen.
IRii more than 3 cells in length, its inner end well proximal to the pterostigma 2.
2. Discoidal cell impinging on posterior border of wing; Riv taking origin distal to subnodus
..... *Perissolestes* Kennedy.
New World. Genotype *Perilestes remotus* Williamson.
Discoidal cell with apex slightly removed from posterior border of wing; Riv taking origin at the level of subnodus *Nubiolestes* Fraser.
Tropical Africa. Genotype *Eolestes diotima* Schmidt.

Subfamily **Chorismagriinae**

Discoidal cell of forewing with basal side absent and, therefore, open at base; Radius not markedly thickened; IRii with inner end well proximal to pterostigma; Riv taking origin at level of subnodus *Chorismagrion* Morton.
Australia. Genotype *Chorismagrion risi* Morton.

Family 2. **CHLOROLESTIDAE**

Dragonflies of larger size and more robust build than in the *Perilestidae*. Wings of males frequently marked or banded with blackish brown or opaque white; pterostigma always more than twice as long as broad; intercalated veins well developed; IRiii arising at level of or widely distal or slightly proximal to subnodus; Riv arising at a variable distance proximal to or at level of subnodus.

Subfamily I. **Chlorolestinae**

Wings of males hyaline or more frequently banded with dark or blackish brown; IRiii and Riv both taking origin from a point nearer the nodus than arculus, the former vein usually at or but slightly distal to subnodus; anal vein leaving posterior border of wing at a point below the discoidal cell and far distal to the cross-vein *Ac*.

Key to Genera of subfamily Chlorolestinae

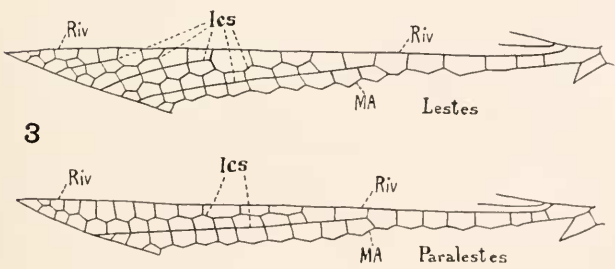
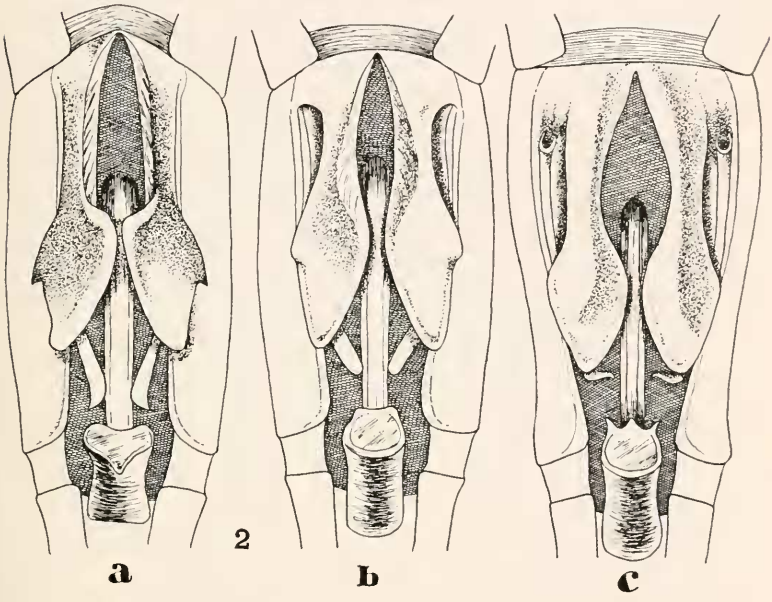
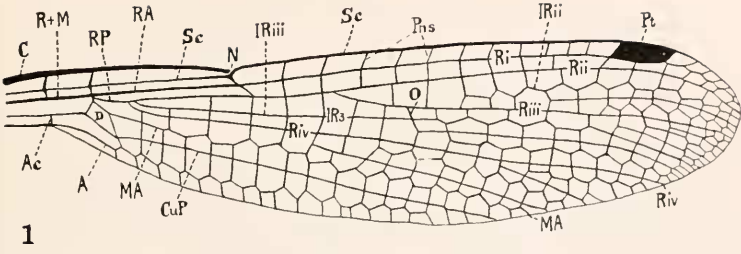
1. Origin of Riv proximal to subnodus 2.
 Origin of Riv from the subnodus 5.
2. IRiii arising at subnodus 3.
 IRiii arising widely distal to subnodus .. *Sinolestes* Needham.
 China. Genotype *Sinolestes ornata* Needham.
3. Discoidal cell of forewing short and broad, its base about one
 third the length of posterior side; superior anal ap-
 pendages of great length, ribbon-like, white
 *Episynlestes* Kennedy.
 Australia. Genotype *Synlestes albicauda* Tillyard.
 Discoidal cell narrow and elongate, its base less than one
 third the length of posterior side; superior anal ap-
 pendages simple, forcipate, black 4.
4. Anal vein separating from posterior border of wing distal to
 base of discoidal cell *Synlestes* Selys.
 Australia. Genotype *Synlestes weyersi* Selys.
 Anal vein separating from posterior border of wing proximal
 to or at level of base of discoidal cell
 *Ecchlorolestes* Barnard.
 S. Africa. Genotype *Chlorolestes peringuey* Ris.
5. Pterostigma bicolorous; inferior anal appendages of male
 bifid *Euchlorolestes* Kennedy.
 S. Africa. Genotype *Agrion fasciatum* Burmeister.

EXPLANATION OF FIGURES

FIG. 1. Forewing of *Lestes sponsa* (Hansem) showing notation employed in this paper: A, Anal vein; MA, Medialis anticus or Median vein; N, Nodus; O, Oblique vein of *Lestes*; Pns, postnodal cross-veins; Pt, pterostigma; Ac, Anal-crossing or Cubital vein; C, Costa; D, discoidal cell or quadrangle; R + M, radius plus medius; RA, radialis anticus or anterior branch of radius; RP, radialis posticus or posterior branch of radius (Rs); Ri, Rii, Riii and Riv, branches of radius; IRii and IRiii, intercalated branches of radius; Sc, subcostal vein (the revised course is shown).

FIG. 2. Male genitalia of: a, *Perilestes remotus* Williamson; b, *Chorismagrion risi* Morton; c, *Lestes sponsa* (Hansem). Note the remarkable similarity between these distantly related species which were formerly placed in different families.

FIG. 3. Spaces between the veins Riv and MA showing 2 intercalaries present in *Paralestes* and a series in *Lestes*.



FIGS. 1-3.

Pterostigma unicolorous; inferior anal appendages of male non-bifid *Chlorolestes* Selys.
S. Africa. Genotype *Chlorolestes conspicua* Selys.

Subfamily 2. **Megalestinae**

Wings of both sexes always hyaline, uncolored; IRiii and Riv taking origin at a point nearer the arculus than to the nodus (as in *Lestes* sens strict.); anal vein leaving posterior border of wing at or often proximal to the level of *Ac*.

Only a single genus: *Megalestes* Selys.

Oriental. Genotype *Megalestes major* Selys.

Family 3. **LESTIDAE**

Moderately robust, medium sized or small, slender Lestine dragonflies. Discoidal cell well removed from posterior border of wing; an oblique vein invariably present between Riii and IRiii; anal vein leaving the posterior border of wing at the level of *Ac* (except in genus *Chalcolestes* Kennedy in which it is proximal to *Ac*); pterostigma nearly always longer than broad.

Subfamily I. **Sympecmatinae**

Small slender Lestine dragonflies which, when at rest, have the wings closely apposed over the dorsum of body. Discoidal cells of fore- and hindwings very narrow and differing in shape and size; pterostigma variable but usually less elongated and more imperfectly braced than in the next subfamily.

Key to Genera of Subfamily Sympecmatinae

1. Pterostigma of hindwing at a more proximal level than that of forewing, so that when the four wings are closed, those of the hindwings fail to coincide with those of the forewings; inner end of pterostigma oblique and continuous with brace *Sympecma* Burmeister.
Palearctic. Genotype *Agrion fusca* Lind.
- Pterostigma of hindwing at the same level as that of forewing, so that with all the wings apposed, the hindwing pterostigma covers that of the forewing; inner end of pterostigma more or less truncate and often divorced from its brace 2.

2. Veins at base of hindwing coated with long hairs; posterior border of wings at base showing a marked convex or angular expansion *Tricholestes* nov. gen. Papuan. Genotype *Lestes risi* Van der Weele.

Veins at base of hindwing naked; no dilatation of wing bases 3.

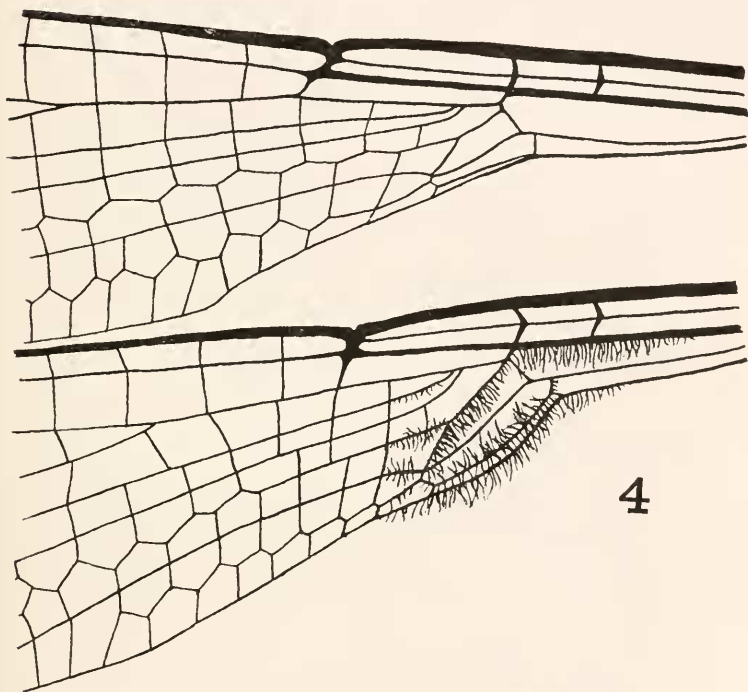


FIG. 4. Bases of wings of *Tricholestes risi* (Weele).

3. Wings tinted with yellow throughout; discoidal cells excessively narrow; pterostigma often bicolorous; markings of thorax and abdomen closely similar to those of *Sympetma fusca* (Lind) *Indolestes* Fraser. Oriental. Genotype *Indolestes indica* Fraser.

Wings untinted; discoidal cells moderately narrow; pterostigma unicolorous; markings of thorax and abdomen differing broadly from those of *Sympetma fusca* *Austrolestes* Tillyard. Oriental, Australian. Genotype *Agrion cingulatum* Burmeister.

Subfamily **Lestinae**

Small to large Lestine dragonflies rather more robust than those of the preceding subfamily, and resting with their wings widely open. Discoidal cells of fore- and hindwings closely similar in size and shape; pterostigma (except in genus *Platylestes*) always considerably longer than broad.

Key to Genera of Subfamily Lestinae.

1. Pterostigma quadrate or subquadrate; thoracic markings reduced to scattered spots; anal appendages of female depressed, obtuse at apex *Platylestes* Selys. Oriental. Genotype *Lestes platystyla* Rambur.
Pterostigma elongate, rarely less than twice as long as broad; thoracic markings, if present, lineate or irregular in character; anal appendages of female conical, acuminate at apex 2.
2. Anal vein separating from the posterior border of wing distinctly proximal to the level of cross-vein *Ac* *Chalcolestes* Kennedy. Palaearctic. Genotype *Lestes viridis* Lind.
Anal vein separating from the posterior border of wing exactly at the level of *Ac* 3.
3. The space between Riv and M not markedly widened at border of wing and enclosing only two long parallel intercalated veins. Dorsum of thorax frequently marked with metallic antehumeral bands which are hook-shaped above or deeply notched on the outer side *Paralestes* Schmidt MSS. Oriental Ethiopian. Genotype *Lestes praemorsa* Selys.
The space between Riv and M markedly widened at border of wings and enclosing a series of gradually shortening intercalated veins. Dorsum of thorax variably marked but never with notched antehumeral stripes 4.
4. Anal border of hindwing with an obtusely angulated dilatation opposite the discoidal cell; discoidal cells remarkably similar in fore- and hindwings, short and broad; Riii with its origin opposite the 2nd postnodal vein *Cyptolestes* Williamson. Neotropical. Genotype *Cyptolestes tuberalatus* Williamson.
Anal border of hindwing normally shaped; discoidal cells fore- and hindwings differentiated, that of hindwing with its base shorter than the costal side 5.

- 5. Riii markedly recessed towards base of wing, its origin situated opposite the 1st postnodal vein . . . *Archilestes* Selys. Nearctic. Genotype *Lestes grandis* Rambur.
Riii with its origin widely distal to the 1st postnodal vein 6.
- 6. Wings of male, save in *O. wallacei* (Kirby), broadly banded or spotted with blackish brown . . . *Orolestes* McLachlan. Oriental. Genotype *Orolestes selysi* McLachlan.
Wings of male hyaline, unmarked 7.
- 7. Large species with abdomen about 50 mm. in length, head, thorax and abdomen entirely green metallic. Pterostigma yellow, swollen *Sinhalestes* gen. nov. Oriental. Genotype *Lestes orientalis* Hagen.
Smaller species with abdomen only 30 to 35 mm. in length, partly or non-metallic. Pterostigma black or brownish, elongate 8.
- 8. Riv ending distally short of the level of pterostigma, especially in the hindwing *Superlestes* Williamson. Neotropical. Genotype *Lestes croleta* Selys.
Riv ending at or slightly beyond the level of pterostigma 9.
- 9. General coloring more or less uniform sandy yellow or brown without metallic or dark markings except for a middorsal dark brown stripe on segments 8 to 10 (but very old adults may show stages of melanism). Pterostigma sandy yellow or with pale distal end
. *Xerolestes* gen. nov. Oriental. Genotype *Lestes pallida* Rambur.
Color usually more or less metallic with dark markings. Pterostigma usually black or blackish brown; dorsum of thorax may be wholly green metallic or with single or duplicate linear metallic stripes with a straight outer border *Lestes* Leach. Cosmopolitan. Genotype *Lestes barbara* Fabricius.